Biodiversity offsets: Managing cumulative impacts of large land-based investments on Africa’s forest landscapes

The case of the Tridom landscape of Central Africa

Fabien Quétier, Pauwel de Wachter, Hélène Dessard, Melina Gersberg, Durrel Nzene Halleson, Maxime Nzita Nganga di Mavambu, Eugène Ndong Ndoutoume, Laurène Feintrenie & Claude Garcia
Land conversion is massive

1992

2006
Infrastructure and extractive industries
Species are vanishing

*Incilius periglenes* – not seen since 1989!
The Mitigation Hierarchy

Avoid

Reduce

Restore

Residual Impact
The Mitigation Hierarchy

Avoid

Reduce

Restore

Compensate / Offset
Achieving NNL through offsets

Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken.

Goal is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people’s use and cultural values associated with biodiversity.
Drivers of NNL goals

Rainey et al. (2014), Oryx
Applying the Mitigation Hierarchy

![Initial state of biodiversity](image)

- **biodiversity**
- **time**

*initial state of biodiversity*
Applying the Mitigation Hierarchy

![Graph showing the initial state of biodiversity decreasing over time to impacted biodiversity.](image)
Applying the Mitigation Hierarchy

initial state of biodiversity

Impact

biodiversity

time

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Applying the Mitigation Hierarchy

initial state of biodiversity

Reduced impact

biodiversity

time
Applying the Mitigation Hierarchy

Initial state of biodiversity

Residual impact

On-site restoration

Time

Biodiversity
Offsets

initial state of biodiversity
Restoration offsets

Offsite restoration

Initial state of biodiversity

Biodiversity

Time
Restoration offsets

Enhancement trajectory

Gain

biodiversity

time

Initial state of biodiversity

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Averted-loss offsets
Demonstrating No Net Loss

Equivalence: in-kind offsets and like-for-like requirements

No Net Loss: gains equal losses

Net Gain: gains exceed losses

Quétier & Lavorel (2011) Biological Conservation
Achieving No Net Loss

Reactive project by project approach

Practive, anticipated, approach that builds synergies with other conservation & restoration actions

Quétier et al. (2014) Environmental Science & Policy
The TRIDOM landscape
The Mbalam and Nabeba deposits

Regional map indicating the main iron ore deposits and transport infrastructure (source: ESIA of Mbalam project)
The TRIDOM landscape
Conservation issues
Ngoyla Forest Concession
Ngoyla Forest Concession
Fighting the empty forest syndrome
Karagoua: the last opportunity?
Karagoua: the last opportunity?
Zanaga & Mayoko (Rep. Congo)
Achieving No Net Loss

• Measurable conservation outcomes
  – Metrics
  – Biodiversity baselines
  – Biodiversity targets
• On the ground action
  – Technical and social feasibility
  – Financial feasibility and legal tools
• Monitoring and reporting
  – Third party verification (and enforcement)
  – Adaptive management
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No Net Loss

- Impacts
- Residual Loss
  - Avoid, Reduce, Restore

Equivalence between “losses” and “gains”
BBOP Principles

1. **Adherence to the mitigation hierarchy**: A biodiversity offset is a commitment to compensate for significant residual adverse impacts on biodiversity identified after appropriate avoidance, minimisation and on-site rehabilitation measures have been taken according to the mitigation hierarchy.

2. **Limits to what can be offset**: There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected.

3. **Landscape context**: A biodiversity offset should be designed and implemented in a landscape context to achieve the expected measurable conservation outcomes taking into account available information on the full range of biological, social and cultural values of biodiversity and supporting an ecosystem approach.

4. **No net loss**: A biodiversity offset should be designed and implemented to achieve in situ, measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity.

5. **Additional conservation outcomes**: A biodiversity offset should achieve conservation outcomes above and beyond results that would have occurred if the offset had not taken place. Offset design and implementation should avoid displacing activities harmful to biodiversity to other locations.

6. **Stakeholder participation**: In areas affected by the development project and by the biodiversity offset, the effective participation of stakeholders should be ensured in decision-making about biodiversity offsets, including their evaluation, selection, design, implementation, and monitoring.

7. **Equity**: A biodiversity offset should be designed and implemented in an equitable manner, which means the sharing among stakeholders of the rights and responsibilities, risks and rewards associated with a development project and offset in a fair and balanced way, respecting legal and customary arrangements. Special consideration should be given to respecting both internationally and nationally recognised rights of indigenous peoples and local communities.

8. **Long-term outcomes**: The design and implementation of a biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the development project’s impacts and preferably in perpetuity.

9. **Transparency**: The design and implementation of a biodiversity offset, and communication of its results to the public, should be undertaken in a transparent and timely manner.

10. **Science and traditional knowledge**: The design and implementation of a biodiversity offset shall be a documented process informed by sound science, including an appropriate consideration of traditional knowledge.
Averted-loss offsets

Overestimating averted losses

Objectives of CoForSet

(1) **Understand the system**: Identifying, characterizing and analyzing existing and proposed offsetting mechanisms and social and environmental responsibility policies developed by public and private operators relevant to the TriDom landscape, their modus operandi as well as the rules, norms and policies surrounding their development.

(2) **Construct Scenarios**: Developing participatory, trans-sectoral scenarios to analyze the links between the implementation of large-scale offsetting schemes, the changes of biodiversity and the delivery of ecosystem services, and the development trajectories of the SES.

(3) **Embedd Results**: Proposing narratives of possible futures for the TriDom landscape and guidelines for the design and implementation of offsetting mechanisms. The narratives and guidelines will be disseminated through an efficient science policy interface, embedding the results of our research in the decision making process at the regional and national levels.
Work packages

- Embedding Results
  - WP3: Learning Lessons

- Program Management
  - WP 0: Project Coordination

- Understanding the SES
  - WP 1: Identifying norms and policies

- Constructing Scenarios
  - WP 2: Compensation scenarios
CoForSet + CoForTips